

We claim:

- 1 1. An ignition system for an internal combustion engine comprising:
 - 2 - an output for electrical activation of an ignition element for a combustion chamber in
 - 3 an internal combustion engine,
 - 4 - an electrical energy accumulator connected to the output for accumulating the
 - 5 electrical energy required for activating the ignition element,
 - 6 - a controllable control element connected to the energy accumulator which is used to
 - 7 charge the energy accumulator during a predefined charge time,
 - 8 - a measuring unit for detecting the charge state of the energy accumulator,
 - 9 - wherein to set the charge time for the energy accumulator, a timer is provided,
 - 10 - said timer being connected to the control element on the output side,
 - 11 - wherein the measuring unit is connected to said timer in a feedback loop whereby the
 - 12 timer adjusts the charge time according to the measured charge state of the energy
 - 13 accumulator, and wherein the measuring unit and the control element, on the one
 - 14 hand, and the timer, on the other hand, are interconnected via a bidirectional control
 - 15 line, and
 - 16 - wherein the energy accumulator is connected to a voltage measurement unit that
 - 17 monitors the ignition voltage wherein the voltage measurement unit is connected to
 - 18 the control line on the output side via a controllable current source or a controllable
 - 19 current sink to superimpose a current signal on the control line according to the
 - 20 measured voltage.
- 1 2. The ignition system according to claim 1, wherein the measuring unit has a
- 2 precision resistor that is connected in series to the energy accumulator.
- 1 3. The ignition system according to claim 2, wherein a threshold element is
- 2 arranged in the feedback loop between the measuring unit and the timer that compares
- 3 the measured charge state of the energy accumulator with a predefined threshold value
- 4 and generates a control signal for the timer according to the comparison.

- 1 4. The ignition system according to claim 1, wherein the measuring unit is
- 2 connected to the control line via a controllable current sink and/or a controllable
- 3 current source to superimpose a current signal on the control line for feedback to the
- 4 timer.

- 1 5. The ignition system according to claim 1, wherein the voltage measurement
- 2 unit comprises a comparator with two inlets between which the energy accumulator is
- 3 connected, wherein the comparator activates the controllable current source or the
- 4 controllable current sink when exceeding a predefined reference voltage value.

- 1 6. The ignition system according to claim 5, wherein the energy accumulator is
- 2 connected to the comparator via a protective resistor.

- 1 7. A method for controlling the an ignition system for an internal combustion
- 2 engine comprising the steps of :
- 3 - charging an energy accumulator during a predefined charge time to accumulate
- 4 electrical energy for providing an ignition voltage,
- 5 - detecting the charge state of the energy accumulator,
- 6 - setting the charge time for the energy accumulator by means of a timer via a
- 7 bidirectional line, wherein the timer adjusts the charge time according to the measured
- 8 charge state of the energy accumulator via said bidirectional line, and
- 9 - measuring the ignition voltage thereby superimposing a current signal on the
- 10 bidirectional line according to the measured voltage.
- 1 8. The method according to claim 7, further comprising the step of comparing the
- 2 measured charge state of the energy accumulator with a predefined threshold value
- 3 and generating a control signal for the timer according to the comparison.
- 1 9. The method according to claim 7, further comprising the step of superimposing
- 2 a current signal on the bidirectional line for feedback to the timer.
- 1 10. The method according to claim 7, wherein the current signal is superimposed
- 2 when the ignition voltage exceeds a predefined reference voltage value.

1 11. An ignition system for an internal combustion engine comprising:

2 - an output for electrical activation of an ignition element for a combustion chamber in

3 an internal combustion engine,

4 - an electrical energy accumulator connected to the output for accumulating the

5 electrical energy required for activating the ignition element,

6 - a controllable control element connected to the energy accumulator which is used to

7 charge the energy accumulator during a predefined charge time,

8 - a measuring unit for detecting the charge state of the energy accumulator,

9 - wherein to set the charge time for the energy accumulator, a timer is provided,

10 - said timer being connected to the control element on the output side,

11 - wherein the measuring unit is connected to said timer in a feedback loop whereby the

12 timer adjusts the charge time according to the measured charge state of the energy

13 accumulator, and wherein the measuring unit and the control element, on the one

14 hand, and the timer, on the other hand, are interconnected via a bidirectional control

15 line,

16 - wherein the energy accumulator is connected to a voltage measurement unit that

17 monitors the ignition voltage wherein the voltage measurement unit is connected to

18 the control line on the output side via a controllable current source or a controllable

19 current sink to superimpose a current signal on the control line according to the

20 measured voltage,

21 - wherein the measuring unit comprises a precision resistor that is connected in series

22 to the energy accumulator, and

23 - wherein a threshold element is arranged in the feedback loop between the measuring

24 unit and the timer that compares the measured charge state of the energy accumulator

25 with a predefined threshold value and generates a control signal for the timer

26 according to the comparison.

1 12. The ignition system according to claim 11, wherein the measuring unit is
2 connected to the control line via a controllable current sink and/or a controllable
3 current source to superimpose a current signal on the control line for feedback to the
4 timer.

1 13. The ignition system according to claim 11, wherein the voltage measurement
2 unit comprises a comparator with two inlets between which the energy accumulator is
3 connected, wherein the comparator activates the controllable current source or the
4 controllable current sink when exceeding a predefined reference voltage value.

1 14. The ignition system according to claim 13, wherein the energy accumulator is
2 connected to the comparator via a protective resistor.